ANGELES PUBLIC LIBRARY
AUG 12 1955
STACKS
SCIENCE AND TECHNOLOGY

the Citrus Industry

Representative of Every Interest
Representing No Special Interest

Vol. 36 — No. 8

AUGUST, 1955

Insect Control

Budwood Certification

Administrative Shippers Advisory Committee

Lime Committee Short Course

Phytophthora Root Rot Of Lychee

McQuarrie Citrus Institute

Subscription $1.00 Per Year Continental U. S. Per Year Outside

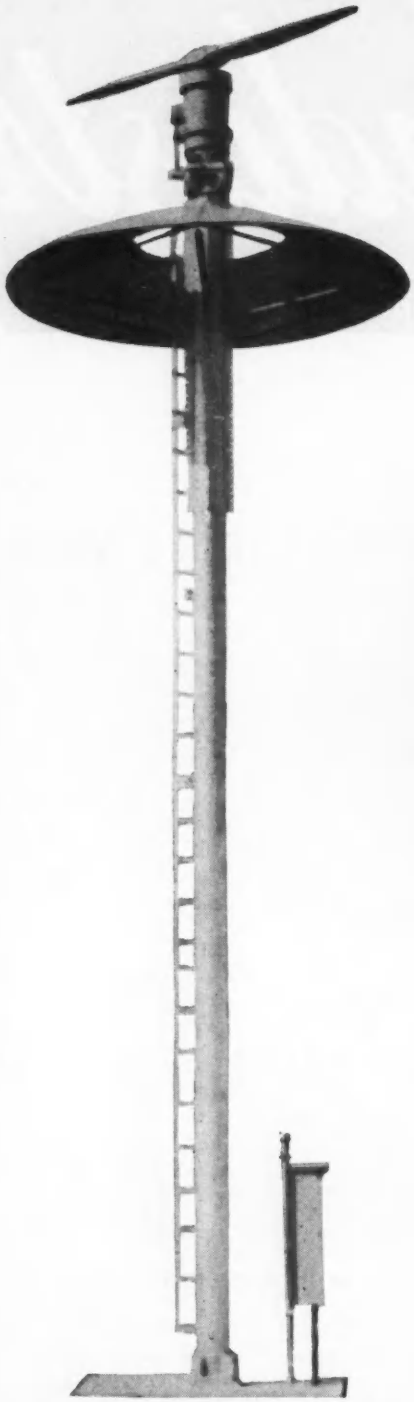
WINTER HAVEN, FLORIDA

AMONG FLORIDA CITRUS LEADERS

R. W. (BOB) RUTLEDGE

General Manager Florida Citrus Mutual, the State's super-cooperative. Mr. Rutledge has long been active in every phase of citrus endeavor for the benefit of Florida citrus growers.

Introducing....



Manufactured By
DIESEL POWER, INC.
GREENVILLE, PA.

The

WEATHER-MASTER

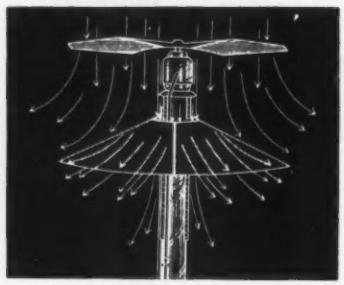
For FROST Control

1953 — Conceived and Designed

1954 — Installed and Proven In The Field

1955 — Repeat Orders Being Received From Satisfied Owners

HERE'S HOW IT WORKS



Employing the helicopter principle, the Weather-Master uses a specially-designed propeller to pull the warmer upper air down against an adjustable diffuser. A large opening at the top of the diffuser permits air to be driven directly down the shaft to protect the area immediately adjacent, while other air is driven against the top of the cone-shaped diffuser and spread out over a much larger area. (Patent Applied For.)

LET US DEMONSTRATE A WORKING MODEL IN YOUR OFFICE

— Restore Those Low Areas To Profitable, Producing Grove Land

— Protect Nurseries and Young Groves

— Protect Your Valencias, Limes and Other Susceptible Fruits

BULLETIN ON REQUEST

DISTRIBUTED BY

KAIN-LAKELAND SUPPLY CO.
BOX 441
LAKELAND, FLORIDA

XUM

R. M. Pratt

Citrus Insect Control

R. B. Johnson

For August 1955

W. L. THOMPSON,
R. M. PRATT
R. B. JOHNSON*
Florida Citrus Experiment Station, Lake Alfred

W. L. Thompson

Purple mite activity has been high most of the time since late February, but is now declining, and assuming approximately normal rainfall, it may be expected to be low in August in most districts. At this time there is a substantial difference among districts, with the activity being high in the central districts and low in the northern and coastal districts. The highest activity, by far, is in the Ridge District.

Rust mite activity was low through the spring months but increased sharply in July. A peak of infestations may be expected some time in August.

Purple scale infestations reached a peak in mid-July and may be expected to decline through August. A high percent of the scales will be in the older stages at the end of July, but an increase in hatching is expected to begin early in August.

Red scale activity was high through July. Few groves were heavily infested but the number of lightly infested groves was high. An increase in hatching is expected to begin by the first week in August.

SPRAY PROGRAM

Dry weather in some areas has delayed the scalicide applications, especially of oil, with the result that the scale control program will continue into August. Heavy rust mite infestations have developed where no sulfur has been applied since the post-bloom period and where oil was applied in June or early July. Purple mite infestations are usually fairly low in August but some groves may be heavily infested. Complications in the control program of the combined infestations of scale and mites, will limit the choice of insecticides where several factors have to be considered, including fruit quality.

Scale Control: Where red scale is a problem, it is advisable to wait until after the middle of August to spray at which time there should be a high percentage of scale in the younger stages. There are always exceptions and if the younger stages are abundant then the scalicide should be applied regardless of the time of the month. The last half of the month should also be an opportune time to control purple scale but the peak of younger stages is usually less noticeable than in the spring, there being more overlapping of stages in the late summer. If the grove is heavily infested, a scalicide should be applied as soon as possible. Satisfactory scale control can be obtained with parathion, an oil emulsion or a combination of oil and parathion. Aside from scale control, other factors to be considered are rust mite and purple mite control, as well as external and internal fruit quality.

During August, a spray of parathion or malathion plus wettable sulfur is the most satisfactory from the standpoint of scale and rust mite control and good fruit quality because these materials do not affect solids or retard degreening of fruit. However, the parathion-sulfur combination does not control purple mites if there are many eggs present when the application is made.

The next best combination is an oil emulsion (0.7% oil) plus 1 pound of 15% parathion, or its equivalent, per 100 gallons. This combination is an excellent scalicide and results in very good purple mite control, but poor rust mite control if applied where more than 10 percent of the fruit is infected. Solids are affected to a certain extent but degreening has not been as difficult as with fruit sprayed with 1.3% oil.

The 1.3% oil has been the standard spray for many years but the solids in the juice may be 10 percent to 20 percent lower in fruit from August sprayed trees than where no oil is used. The lowering of solids is more critical if a post-bloom oil is followed with another in August. If 1.3% oil is to be used, then it should be applied as soon as possible regardless of variety, because late oranges are affected as well as early varieties. The 1.3% oil results in excellent control of purple mites, and if the application is made early in the month, some greasy spot control may be expected.

Rust mite infestations are expected to be heavy in August even though the summer rains appear to have started. Careful inspections should be made following oil sprays and where no sulfur has been applied since June. The combination of .75 of a gallon of lime-sulfur plus 6 to 8 pounds of wettable sulfur is an effective summer combination spray but it should not be sprayed on tangerines, Temples and early varieties of oranges. On those varieties, use either wettable sulfur or dust with sulfur. For the longest period of control, make a rather thorough application that will deposit sulfur on the under surfaces of leaves.

Purple Mite Control: Heavy infestations are still present in some groves but during August the infestations usually decrease except where excessive sulfur applications have been made. Oil sprays are about the only effective materials during the warm summer months. Unless the mite infestation is very heavy or scale control is necessary, it may be advisable to wait until September or early October to control purple mites.

For more detailed information refer to the 1955 "Better Fruit Program" or consult the Citrus Experiment Station at Lake Alfred or Fort Pierce.

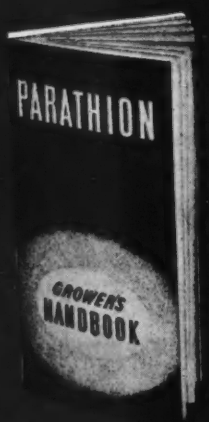
*Written July 26, 1955. Reports of surveys by Harold Holtsberg, Cocoa; J. W Davis, Tavares; K. G. Townsend, Tampa; J. B. Weeks, Avon Park; and T. B. Hallam, Lake Alfred.

NOTES OF THE TRADE

Mr. O. L. (Bill) Coulter has been appointed Sales Manager in charge of Florida sales effective July 1st, it was announced recently in Winter Park, Florida by Victor Gentile, President of the corporation.

Mr. Coulter has had many years of experience with Gentile Bros. Company in the field and packing operations, having started with that firm in 1930. For the past several years he has been in charge of sales for Sanford Fruit Co., Sanford, Florida, and the Square Deal Fruit Company in Winter Park.

USE CONCENTRATED SPRAYS OF PARATHION



AMERICAN *Cyanamid* COMPANY

The Citrus Industry
EXCLUSIVE SPECIALIZED CITRUS PUBLICATION
Issued Monthly
Representative of every interest
Representing no special interest

Publication office at Bartow, Florida. Entered as second class matter February 16, 1920, at the post office at Tampa, Florida, under act of March 3, 1879. Entered as second class matter June 19, 1933, at the post office at Bartow, Florida, under act of March 3, 1879.

Citrus Institute Program
At Camp McQuarrie

Top citrus scientists of the United States Department of Agriculture, the Citrus Experiment Station, University of Florida College of Agriculture and Experiment Station, as well as representatives of the Florida Citrus Commission, production managers, growers and industry leaders have accepted invitations to appear on the program of the 22nd Annual Citrus Institute, Lake County Agent R. E. Norris, Institute Manager, has announced. The Institute will be held at 4-H club Camp McQuarrie, near Astor in Lake County, in the Ocala National Forest Monday to Friday August 15-19, 1955.

A special feature of the program this year will be an address by Gwynn Garnett, Administrator Foreign Agriculture Service, U. S. Department of Agriculture, Washington. Mr. Garnett is presently in the United Kingdom conferring with officials there on citrus export matters and will report to the growers on his talks with these officials. Garnett is attending the Institute at the special invitation of Florida Citrus Mutual.

The Citrus Institute is educational, recreational and inspirational. It is designed to be of interest to the citrus family with special entertainment features during the evening and with fishing, boating and bathing facilities for all who wish to enjoy them.

The Citrus Institute is sponsored and directed by the University of Florida Agricultural Extension Service.

GWYNN GARNETT
ADMINISTRATOR FOREIGN AGRICULTURE SERVICE, USDA, WASHINGTON

Persons wishing to attend the institute and use the overnight facilities that are available are asked to make reservations with R. E. Norris, County Agent, Tavares, Florida. Twelve cottages are available. Cottages are reserved for women and children and for men and boys. Sleeping accommodations in the cotages are available without charge as long as they last on the basis of "first come, first served". Persons using the cotages should bring pillows and linens as these are not furnished. Meals are available at the camp mess hall at a nominal charge. Sleeping facilities are also available at nearby motels and fishing camps. A list of these facilities will be furnished by writing Norris.

The entire program follows:

Monday, August 15 from 2:00 p. m. to 6:00 p. m., Camp Registration; 6:15 p. m. Supper in the Mess Hall and at 8:00 p. m. Assembly in the Auditorium for entertainment.

Tuesday, August 16, K. S. McMullen, Extension Service District Agent in Charge. 7:15 a. m. Breakfast, Mess Hall; 8:30 a. m. Announcements in Auditorium, F. P. Lawrence, Citriculturist, Agriculture Extension Service, Presiding.

8:45 a. m. Invocation followed by welcome, Karl Lehmann, Secretary Lake County Chamber of Commerce. Opening remarks H. D. Clayton, Director, Florida Agriculture Extension Service, Gainesville.

"How can we further Increase Consumption of Frozen Citrus Products?" by Marvin H. Walker, General Manager Florida Citrus Canners Cooperative, Lake Wales, followed by Intermission.

"Advertising as a Factor in Marketing Florida Citrus" by P. S. Patterson, Director of Advertising, Florida Citrus Commission, Lakeland.

"pH and Lime Requirements of

Florida Citrus" by Dr. Paul L. Smith, Plant Physiologist, U. S. Department, of Agriculture, Orlando.

12:15 Dinner at the Mess Hall.

1:30 p. m. Dr. Marshall O. Watkins, Assistant Director, Florida Agricultural Extension Service, Presiding.

"Estimating the Florida Citrus Crop" by Paul L. Shuler, Citrus Statistician, USDA, Orlando.

"New Parasite Introduction" - Alan G. Selhime, Entomologist, USDA Orlando, followed by Intermission.

Insect Control Panel with J. E. Brogdon, Entomologist, Agricultural Extension Service, Moderator. Panel Members: Dr. M. H. Muma, Citrus Experiment Station; Dr. Herbert Spencer, USDA; Dr. R. F. Suit, Citrus Experiment Station; W. A. Hunt, Grower; Lail Morthland, grower; Don M. Kemp, Production Manager, Lake Region Packing Association, Tavares.

4:00 p. m. Adjourn for swimming, boating, fishing. Supper at 6:15 with entertainment in the auditorium at 8 O'clock. Special Entertainment will feature the Tom Thumb Follies of Orlando.

Wednesday, August 17, K. S. McMullen in Charge. 7:15 a. m. breakfast in the Mess Hall followed by announcement in the auditorium at 8:30. F. W. Parvin, Assistant to the Director, Agricultural Extension Service, presiding.

"Seasonal Changes in Florida Tangelos" - Dr. Paul L. Harding, Principal Plant Physiologist, USDA, Orlando.

"Citrus Production Research Problems" - Dr. H. J. Reitz, Horticulturist, Citrus Experiment Station, Lake Alfred, followed by Intermission.

"Handling of Citrus in Groves and Packing Houses" by Eric Thor, Associate Agricultural Economist, Agricultural Experiment Station.

"Progress Report on the susceptibility of the various rootstocks to Citrus Decline" by Dr. R. F. Suit, Plant Pathologist, Citrus Experiment Station.

12:15 p. m. Dinner in the Mess Hall with resuming of program at 1:30 p. m. Jasper Joiner, Assistant Horticulturist, Agricultural Extension Service, Gainseville, presiding.

"Comparison of Various Types of Iron Chelates on Fruit Burn" by Dr. Ivan Stewart, Assistant Biochemist and Dr. C. D. Leonard, Associate Horticulturist, Citrus Experiment Station, Lake Alfred.

"Subject to be announced" by Dr. F. E. Gardner, Principal Horticulturist, USDA, Orlando, followed by Intermission.

"What's on a Fertilizer Tag and What Does It Mean?" by Dr. Dan Spinks, Professor of Soils, Universtiy of Florida's College of Agriculture, Gainesville.

"Florida's Citrus Budwood Certification Program" by Gerald C. Norman, Citrus Budwood Certification Office, State Plant Board, Winter Haven.

At 4:00 p. m. adjournment followed by swimming, boating, fishing, etc., with supper at 6:15 and evening entertainment in the auditorium at eight O'clock. This evening's entertainment will feature Wally Lono and his troup, Hawaiin music and dancing.

Thursday, August 18, K. S. McMullen in Charge. Breakfast at 7:15 a. m. followed by announcements in the auditorium at 8:30. Dr. E. W. Cake will preside over the program.

"Grower Selection of a Sales Agency" by Dr. E. W. Cake, Marketing Specialist, Agricultural Extension Service, Gainesville.

"Methods of Selling Fresh Fruit" by Dr. H. G. Hamilton, Head, Department of Agricultural Economics, University of Florida, Gainesville.

"How to Use the Auctions More profitably" by A. P. Rightor, President Union Fruit Auction Produce Station, Pittsburgh, (Assisted by Chase W. Irrgang, Fruit Auction Sales Company, Chicago).

SPECIAL NOTE: Following this talk a special catalogue will be distributed. This together with fresh fruit held in cold storage, will be the "props" for an auction sale of a car of fruit to the audience. * (Fruit supplied thru courtesy of the Lake Region Packing Association, Tavares, and kept cold storage by Dr. Paul Harding, USDA, Orlando.

12:15 p. m. dinner in the mess hall followed by program at 1:30 with Prof. L. W. Ziegler, Professor of Citriculture, University of Florida, Presiding.

"Export Possibilities with Florida Citrus" by Gwynn Garnett, Administrator, Foreign Agriculture Service, U. S. Department of Agriculture, Washington (formerly Director, Foreign Division, American Farm Bureau Federation).

(Appreciation is extended Florida Citrus Mutual for extending the invitation for Mr. Garnett to speak to the Institute).

"Citrus Sales with a Branding Iron" by Walter Page, Advertising Manager, Florida Citrus Exchange, Tampa, followed by intermission.

"What the records show regarding Rates of Fertilization" by Zach Savage, Associate Economist, Agricultural Experiment Station, Gainesville.

Fertilizer panel with Fred P. Lawrence, Moderator. PANEL MEMBERS are Dr. Walter Reuther, Head, Department of Horticulture, U. of F.; Dr. Herman Reitz, Citrus Experiment Station; Dr. Paul Smith, USDA; Dr. O. C. Bryan, Soil Science Foundation, Lakeland; Herbert Boltin, Production Manager, Triple E Development Co., Dade City; E. L. Atkinson, grove caretaker, Umatilla; W. H. Gibb, Jr., grower; Zach Savage, Agricultural Experiment Station, Gainesville.

At four o'clock the meeting will adjourn followed by boating, fishing, swimming, etc. Supper will be served at 6:15 with the evening program beginning at 8 o'clock in the auditorium.

Friday morning, August 19, breakfast will be served at 7 o'clock and the camp and institute will adjourn shortly thereafter.

Duda Appoints Cooper Chairman Growers Convention

Andrew Duda, Jr., Oviedo, President of the Florida Fruit and Vegetable Association has announced the appointment of George H. Cooper, Princeton, as General Chairman of

Cooper

the Association's 1955 Convention, being held this year at Hotel Fontainebleau, Miami Beach, on October 4, 5 and 6.

"It is my pleasure to announce the appointment of Mr. George H. Cooper, President of the Glade and Grove Supply Company, and long identified with the fruit and vegetable industry of this state, as General Chairman of our 12th Annual Convention.

"It is an honor to which he is more than entitled. It is also a position for which he is well qualified. I am confident that as a result of his efforts, members of the Association and guests attending our coming convention will be well rewarded," said Duda.

XUM

Citrus Budwood Certification Program . . .

Before I get into this report I want to say that if Florida's Budwood Program is not successful it certainly won't be due to lack of support by our nurseryman and growers. Not only have they shown a sustained and continuing interest in this program but 46 of them believe in it enough to put their time, their effort, and their money into it as participants. Our problem has been not to get enough participants in the Program but to hold the number of participants and number of trees down to what we could properly handle. Besides the growers, we had men like Fred Lawrence and Bob Norris who not only were interested in seeing this Program started but are still interested in it and are still working for its improvement and expansion. Individuals and organizations all over the state have demonstrated over and over their willingness to help us in any way they could.

In view of this attitude on the part of our Florida citrus people, I feel that the least I can do here today is to give you as simple, honest, and strightforward a report as I can on your Citrus Budwood Certification Program. I promise not to read the Budwood regulations to you since they make pretty dry listening, and I have made a conscientious effort to avoid quoting figures and statistics as much as possible. We have plenty of copies of both the regulations and the statistical summary of the Program available to any of you who would like them. In this report I hope to tell you what we have done in the last two and a half years, (what we have been through might be a better way to put it,) what we have accomplished to date, and what we hope to achieve in the future.

Generally when the Plant Board wants to undertake a project such as Budwood Certification it becomes necessary for us to go to a group of nurserymen or growers in the area concerned to be assured of their cooperation and to convince them of the value of the work we would like to do. Frequently committees are set up to advise us on the general attitude of the industry toward a proposed project and to enable us to accomplish the work with a minimum of friction.

In the case of the Citrus Budwood Program, we were fortunate in that the citrus industry saw the need for this Program and asked us to take it over after most of the preliminary thinking had been pretty well settled by the industry itself. Originating in the Production Manager's Association, the Program was first publicly advocated at Camp McQuarrie and later accepted and endorsed by the Florida Horticultural Society. The Society appointed a committee, headed by Bob Edsell, to cooperate with the Plant Board in working out the foundation for the Program; and that committee worked long and earnestly during the latter months of 1952 to provide the principles which would govern the Program. A. C. Brown, who was then Plant Commissioner, and Paul Frierson, Chief Nursery Inspector at that time, then converted these principles into the regulations under which the Program operates today.

GERALD G. NORMAN
IN CHARGE
CITRUS BUDWOOD CERTIFICATION OFFICE
AT SUB-TROPICAL FRUITS INSTITUTE, LAKE PLACID

After the Horticultural Society's Committee had accepted the Plant Board's regulations we were ready to start on the first or virus phase of our work. However, before any actual work had been done it was announced that Tristeza had just been found in west Orange County. This was a possible complication because the virus phase of the Program had been aimed at those virus diseases that could be transmitted only by budwood, and here was a virus that could be carried by insects as well as by budwood. Since Tristeza was not known to exist here in Florida at the time the regulations were written, another meeting of the committee was held in Orlando to discuss what effect if any this disease would have on the Budwood Program, and whether any of the regulations should be revised.

At this meeting, Dr. Grant of the U.S.D.A. Station in Orlando who first discovered Tristeza in this state and had worked with the disease in South America offered his opinion that Florida's Budwood Program was now more necessary than ever. He felt that some of our trees might survive the Tristeza virus since it appeared to be a mild form, but certainly would not have much chance where the trees had already been weakened by Psorosis or some other virus. Acting on this advice, the committee agreed to go ahead with the Program as it was originally proposed.

Late in the winter of 1952 we began to get requests from growers desiring participation in the Program and on January 1, 1953, the Plant Board opened a field office in Winter Haven so the Program could be handled from the center of the state's citrus producing area.

Before we accepted and undertook the selection and testing of parent citrus trees to be used as sources of budwood, we knew we would have a big job. First priority was given to training our own personnel in the recognition of virus symptoms in the field since this part of the work would probably be the most difficult and take the most time. Selected teams of inspectors were sent to Orlando and Lake Alfred for instruction combining laboratory, lecture, and field work. Dr. Childs and Dr. Grant in Orlando, and Dr. DuCharme and Dr. Knorr in Lake Alfred gave very generously of their time in this intensive training and Childs and Knorr later accompanied our men into the field as the work of inspection began.

One of the first things we learned in the course of our training was that

the symptoms of virus diseases are not always specific or conclusive. There is no quick laboratory test for the presence or absence or virus. There is no test-tube test, no litmus paper test. We learned that Pathologists specializing in the viruses of citrus were the first to acknowledge that these were extremely complex diseases, often difficult and in some cases almost imposible to indentify—that some viruses have several distinctly different strains, and that viruses probably existed of which we were ignorant; that climate, fertilizer, pruning, or any kind of shock might influence the appearence of virus symptoms and in some cases might produce virus-like symptoms where no virus existed.

We learned that research on these diseases was far from completed; that much of the information available had been worked out in other parts of the world and might not apply to Florida or to field conditions generally, and that even well recognized virus diseases varied in their appearances in different areas during the various seasons of the year. We learned that we would have to depend on probabilities rather than realities.

We learned that as late as 1926, just 30 years ago, Dr. Howard S. Fawcett, at that time the world's leading authority on citrus diseases, made no mention of viruses in his book, "Citrus Diseases and Their Control". Apparently he had not been able to prove their existence in citrus up to that time. We learned that, even though knowledge of these diseases was continuously increasing, much more information was needed to make simple field examinations conclusive. We learned that by their very nature some of the questions connected with these diseases seemed almost unanswerable; that researchers following a plan they hoped would answer some pertinent questions very frequently came to the end of a blind trail.

We learned that one of the primary premises accepted by pathologists, and one on which much of their work is based, is that citrus seed seldom if ever transmit virus diseases, and that any citrus seedling therefore is presumed to be free of virus at the time of germination, and will continue to be free until inocculated—that inocculation of a seedling may be made with buds or grafts by man, by insect transmission, or by nature root grafts with infected trees. Another major premise accepted in virus research is that very small amounts of living tissue, when taken from an infected tree will transmit the virus to a healthy tree, eventually affecting all parts of that tree including the rootstock; that once infected, a budded seedling might carry some viruses for 8 or 10 years or longer before it showed any outward sign of collapse from the virus—and in the meanwhile its budwood would be capable of infecting any other tree. We learned that there is no recovery from citrus virus infection, that once infected the tree would continue to carry the virus until it died.

If we accepted these facts, then our only hedge against these possible gaps or inconsistencies was to accept no trees where any doubt existed in our own minds or where any inconsistency was even suspected. From the very beginning we took the attitude that this was a business proposition, that we had a responsibility both to the state and to the industry at large and that we owed it to the growers and nurserymen who had asked for this Program, to give them just what they had asked for, that is, fine vigorous trees, true to type, and free of virus disease. So we realized we had to apply all the pathological experience and knowledge obtainable and when this was exhausted, to fall back on very close observation and our own common sense. We began to understand that in many cases where a prospective candidate tree had been screened by every field test we could give it, we still could not accept the tree as a candidate simply because there was something about it that was not right.

On the other hand we learned that we did have some definite aids or tools to help us in our work with the citrus viruses. These were the known symptoms associated with specific types of virus. In field work, the most valuable of these tools were probably the two types of Psorosis leaf symptoms, the bark symptoms of the three common types of Psorosis, and the bark and union symptoms of Exocortis, Xyloporosis, and Tristeza. These symptoms had all been described in the literature and in most cases were well defined. We learned that given sufficient time we could reproduce these symptoms in case they were not visible or conclusive at the time of our field inspection. So, for every tree accepted as a candidate parent we now have 8 trees growing in our Winter Haven test plot, three buds from each parent growing on sweet seedling rootstock for the Psorosis test which takes two years, 3 buds from each parent growing on Nucellar Orlando Tangelo rootstock which we use as an indicator for Xyloporosis and which takes 4 years, and 2 buds from each parent on Trifoliata rootstock for the Exocortis test which takes about 7 years. In addition to these tests, Dr. Cohen in Gainesville also receives wood from each prospective parent tree. This wood is grafted into 5 Key Seedlings to test the presence of Tristeza in the candidate trees. This gives us 13 test trees in all growing from each parent tree to back up the accuracy of our field work

One of the budwood regulations provides that the grower make his own preliminary selection of the trees he intends to enter as candidates. This seemed to us logical, almost a necessity, since the grower knew where his best producing trees were located and was in every way more familiar with his trees than we could be. Actually this provision did not work out very well because the grower in most cases was simply not able to make this inspection, so as a consequence we did most of the preliminary work ourselves. One of the fine things about our training is that we have been able to pass on our knowledge to the growers as we worked on their trees. Today there are many growers, production managers, and nurserymen who are well qualified to do Psorosis inspection in the field.

How many thousand trees we have inspected in this one part of our work I don't know. We have been up in the tops of 50-foot grapefruit trees in Pinellas County, and down on our hands and knees under the Dade County Limes. We have worked for days in a single large planting without finding one tree acceptable even as a possible candidate. We have seen a number of good trees, and we have seen a lot of poor ones.

We began our first Psorosis inspection on February 21, 1953, and 60 days later had completed the spring inspection on all the trees applied for up until the time the flush began. We found that the spring flush on citrus trees in this state doesn't necessarily begin in Dade County and work northward to Marion and Alachua as you might expect but popped out in scattered areas all over the state, generally beginning on Grapefruit, then on the sweet oranges, and last on the Temples and Tangerines Limes, from what experience we have had with them in Polk and Dade Counties, flush approximately 6 weeks earlier than Grapefruit. We found that it was difficult even where a grove was under weekly observation to predict with any degree of accuracy the time that a given tree would flush.

As a consequence, we set up the most flexible procedure that we could. Inspectors working as a team in an area met in the early morning and

(Continued on page 18)

Florida Lime Commission Charts Course

BY L. L. CHANDLER

(AS TOLD TO HERB MOSHER)

There was recently voted in by a very heavy majority a marketing agreement on limes. This takes the same steps and authorizes regulations and controls of the same things as in the avocado marketing agreement. Both of these agreements are managed by an administrative control committee appointed by the Secretary of Agriculture. In limes the principal competition comes from Mexico and the major thing that the Florida grower wishes is for the Mexican limes to contain 42% juice which is the same requirement as applied to Florida limes going to the market. Of course there are good limes shipped from Mexico but there have been many poor ones too. The Mexican limes turn yellow when fully matured and have seeds in them. The Persian Limes are good and juicy and are at their best when green in color. However, they finally turn yellow, in fact just as yellow as the Mexican limes do but they are not good shippers at the yellow matured stage. In their haste to get on the market as soon as possible, the Mexicans pick their limes while quite green in color and many of them are half yellow when actually sold in the markets. The same condition somewhat prevails with Persian limes. They are picked when green in color but many of them will be yellow when finally sold to the consumer. A consumer has no way of knowing whether a lime is from one place or another and cannot tell how much juice is in a lime until purchased and cut for juice. The Florida grower feels, and rightfully so, that the lime should be a good juicy one regardless of where it comes from.

SALES PROMOTION NEEDED

There are many growers in Florida, as well as over the nation, who feel that there should be a sales promotion, advertising and publicity program properly handled to let the consuming public and the trade in this nation know about avocados and limes from Florida. It has not been felt wise to attempt to advertise until the quality and standards of the products have been set up so that advertising was justified. With all this in mind, a Bill was drawn and presented to the Legislature of Florida in the recent session. This Bill authorized the creation of the Florida

Herb Mosher

Avocado and Lime Commission. It set up membership of nine, five of which came from Dade and Monroe Counties and four came from the other producing areas of the state. This Commission has the authority to impose an excise tax of 10c per 55 pound bushel of avocados and limes each year for the next two years which should produce about $100,000 each year. This will be spent for advertising, sales promotion and publicity. Meantime, there was already a tax of 4c per 1 3/5 bushel of limes which the Florida Citrus Commission had been collecting. This will continue for the next two years.

The Florida Avocado and Lime Commision held its first organization meeting in the Dade County Agricultural Agent's Office, Homestead, Florida on June 30, 1955. Officers elected were, L. L. Chandler, Goulds Chairman; G. F. Ward, Avon Park, Vice Chairman and Henry R. Pridgen, Homestead Secretary. The first and routine steps were taken at this meeting, giving notice to the Governor, the Attorney General, the State Comptroller and those interested agencies that the organization meeting had been held and the new commission was under way.

On July 8th the new commission met with certain members and officials of the Florida Citrus Commission and received from them their advice and consultation as to how the new commission should set itself up and function. Also there will be worked out the joint program of advertising limes, as both agencies have a part to play in that regard.

STUDYING MANGOS

With respect to mangos, there has not been anything done yet. Investigations of various kinds are under way. Quarantine enforcements of various kinds are being investigated. It is reported that large quantities of mangos are coming in from Mexico, also large shipments from Puerto Rico. Just what this will do and how it will all be worked out no one knows. There was a fairly good crop of mangos in Florida this year and prices have not been as good as the growers thought justified. Just what can be done they have not decided. A marketing agreement on mangos has been suggested. However, a marketing agreement could have some effect on Mexican imports as to quality, grade, etc. but none whatsoever on Puerto Rico. As you know, there is a large acreage of mangos planted and coming into bearing in Florida. Here is a real problem and one that must be faced. It is greatly to be expected that the experience of the avocado and lime people will perhaps work out a suggested program for mangos.

The Florida Fruit & Vegetable Association has been greatly instrumental and of great assistance in all these programs. Locally the Florida Avocado and Lime Council has been of great assistance also.

As you know, avocados, limes and mangos comprise a few thousand acres of tree crops now in Florida. Avocados produced in Florida are shipped primarily from June through December and on into January. They compete with Cuba during the months of June, August and September. Cuban shipments are restricted to those four months by a type of gentlemen's agreement between the government of Cuba and the United States and this was a left handed action of settling what would have been a long drawn out battle of the absence of duty rate on avocados from Cuba into the United States. In order that the matter might be settled, the Cuban government agreed to restrict avocado shipments to the period named. That has been in effect since 1934. It has for its effect this. Cuba has not attempted to plant the later varieties

which she could have had if this restriction was not imposed.

AVOCADO SHIPMENTS GROW

The avocado shipments and volume has grown considerably. The avocado industry has made the usual mistakes that growers make. The fruit was shipped immature and there isn't anything much poorer as a commodity than an immature avocado. There was a great absence of grade standards. Every packing house man or shipper was a standard of grades unto himself. Every packing house man had a string of different size packages which he used without respect to what anyone else used. This same thing existed in Cuba. There the avocados are mostly the seedling variety. The restriction to four months as named above has not hampered the Cuban people as to planting of later varieties because historically about 95% of the avocados ever shipped from Cuba normally have been shipped during those four months. As time has passed the avocado industry in California has grown very rapidly. Their season runs principally from December through the following June and yet does some shipping the year round. About 80% of the avocados shipped out of California are of the small Fuerte variety.

Florida produces the West Indian and Guatemalan or later type frost resistant avocado. Florida finds herself shipping avocados in the late summer and early fall for the peak season and at that time every fruit and vegetable known to man is in the market in profusion. This creates within itself a problem, as anyone could easily see. Much time and effort has been expended by the Florida growers attempting to produce still earlier varieties of avocados or much later varieties.

MANY PLANS CONSIDERED

Many many plans have been presented for voluntary solution of our problems. Some have been tried temporarily. Little or no advertising has been done. In the spring of 1954 the Florida Fruit and Vegetable Association, through its Foreign Competition Division under the Chairmanship of Luther Chandler, and backed by the full strength and resources of that association and under the direct leadership of Senators Spessard Holland and George Smathers and the representatives from Florida with special reference to the Honorable Sid Herlong, the late Dwight Rogers and Bill Lantaff, passed through Congress amendments to the Marketing Agreement Act which authorized a marketing agreement on avocados produced in Florida based upon the usual terms of a marketing agreement. In addition thereto, these amendments authorized a marketing agreement in Florida having control over size, grade, maturity, quality, maturity and containers and limited research. Last but not least it set up that any order written by the Avocado Administrative Control Committee and when approved by the Secretary of Agriculture, U.S. D.A., such order would not only be imposed upon the Florida industry but would apply to imports at the same time. This had for its major purpose the shipping of properly matured, sized and graded avocados. Obviously this is a program that requires a great deal of thought and attention. The most unique feature of the Florida efforts in this respect is that the Cuban industry and the Cuban Department of Agriculture approved and supported the Florida growers in putting this program into effect. The program went into effect too late in 1954 to have any effect on the Cuban shipments. However, in this beginning of the shipping season of 1955 they are now going under the program and I am very happy to say that the Cuban industry and the Florida industry are working quite well together in order that the regulations imposed may be fair to both sides and yet ship to the markets those standards and grades of fruit that will cause a better market and a re-establishment of prosperity among avocado growers not only in Florida but in Cuba as well. Naturally there is considerable comment on this type program because it is a different one and has not been tried anywhere else. It is to be hoped that this program will be entirely successful and will lead to a solution of the foreign as well as the domestic producers problems.

On the Avocado Administrative Committee there are producers and shippers. This committee is taking itself very seriously and rightfully so. For instance, it has just had its committee make a trip to Cuba to make a very careful survey of the avocado producing areas and they were accompanied by Dr. Paul Harding, a U. S. Department of Agriculture expert on the subject of grade and maturity standards. Mind you, all this is so that the order they could come back and write or recommend to the Secretary of Agriculture would be a fair one not only to the Florida growers but to the Cuban growers also. Truly I think the Florida avocado industry has a right to commend itself and certainly it is to be hoped that all will lend their fullest cooperation.

Florida Entomologists Study Insect Control

New and important developments in the field of entomology will be discussed at the annual meeting of the Florida Entomological Society, scheduled to be held Thursday and Friday, September 1 and 2, at the Roosevelt Hotel, Jacksonville.

Special papers, according to G. W. Dekle, of Gainesville, program chairman, will be presented under the following headings: Miscellaneous Insects, Insects Affecting Man and Animals, Vegetable Insects and Citrus Insects. The entomologists who will discuss these subjects will be announced at a later date.

DR. F. GRAY BUTCHER

The Thursday morning session will include registration, the invocation by Dr. Frank K. Dunn, of the First Christian Church, Jacksonville; address of welcome by Frank Winchell, manager of the Jacksonville Tourist and Convention Bureau; a response to the welcome and introduction of the society's president by M. C. Van Horn, vice president of Wilson & Toomer Fertilizer Company and manager of Florida Agricultural Supply

(Continued on page 12)

Clitocybe Root Rot Of Lychee

DR. MORTIMER COHEN
PATHOLOGIST, FLORIDA STATE PLANT BOARD
AT SUB-TROPICAL FRUITS INSTITUTE, LAKE PLACID

When a new crop is introduced into an area one can always be sure that new and sometimes difficult problems in its handling will arise. Credit must therefore be given to those with enough vision to introduce a new commercial agricultural enterprise and with courage enough to face its inevitable problems, before the culture of the new crop is well understood and firmly established.

The growing of lychees as a commerical orchard crop is especially significant at this time because it affords an opportunity for a much needed diversification of Florida horticulture and especially because it appears to be resistant to the burrowing nematode which has been so destructive to citrus.

A problem which has arisen in a few of the new lychee groves which are appearing throughout Florida is a root and crown rot caused by **Clitocybe tabescens (Fr.) Bres.** This disease, while comparatively new to lychee growers is one which has been studied on other hosts for many years. Since this situation may become more serious it deserves careful examination at this time.

HOST RANGE

Clitocybe root rot, has been found on 210 different species of plants in Florida, according to Dr. A. S. Rhoads (4) who has been studying this disease for almost 30 years. This very wide host range mainly embraces woody plants including ornamentals and forest trees as well as fruit and nut trees of many kinds. It also includes monocotyledonus plants such as some palms and even bananas.

Some of the plants found to be susceptible are of small economic importance but below are listed some which are important economically:

Australian pines — Casuarina spp.
Peach — Prunus persica
Oaks — Quercus sp.
Tung — Aleurites fordii
Citrus — Citrus spp.
Guavas — Psidium spp.
Rubber Plant — Ficus elastica
Sand pear — Pyrus pyrifolia

Clitocybe rot can be devastating on susceptible plants. One of the most frequently attacked has been the Australian pine, including a number of different species of this type. Rhods studied a long windbreak row of Australian pines on Merritt Island over a ten-year period (5). He found that 77% of the 263 trees were killed by Clitocybe rot during that time.

Also very susceptible to Clitocybe rot is the peach. According to Thornton (7) a young peach orchard northwest of Dade City had 38 percent of its 1400 trees attacked by the time the trees were 3½ years old. Clitocybe has been found to attack peach orchards all through the southeast.

Another Florida orchard crop attacked by Clitocybe is tung. Trees affected by root rot have been found in all the main tung producing states on both clay and sandy soils.

The effect of Clitocybe rot on citrus is especially interesting. This disease is apparently quite resistant since it is not uncommon on citrus but citrus is apparently quite resistant since it will survive for years after the infection has begun.

Clitocybe rot is also called mushroom rot because the fungus which causes this disease produces mushroom fruiting bodies at certain stages in its life. Clitocybe is one of a number of such rots which are known throughout the world. In the western and northern states **Amillaria mellea** a fungus closely related to Clitocybe, is the usual cause of mushroom root rot. Armillaria is found in northern Florida, but in Florida it is apparently of secondary importance only.

Still another type of mushroom root rot is the Demiatophora - Rosselinia complex which is found in California, in some European countries and in many tropical areas around the world.

The mushroom fruiting bodies of **Clitocybe tabescens** usually appear in a group of a few to thirty or more individuals. The caps are whitish or light tan and the whitish gills are decurrent (run a short distance down the stem). Millions of spores are produced on the gills of each mushroom and these are freely blown about by the wind. Each spore is capable of reproducing the fungus, yet, surprisingly, the evidence is that new infections on orchard trees usually are not started by spores. This is true for Arbillarie as well as Clitocybe.

METHOD OF INFECTION

How does infection generally occur? Contact of roots of susceptible plants with roots or root pieces of a previously infected plant appears to be the usual way in which this happens. While this is the usual means by which infection takes place cases have been observed in other crops where trees showed Clitocybe rot in areas which had had no scrub oaks or other susceptible trees for many years. Observation of this kind suggest that infection may sometimes be started by spores. However, known cases of mushroom root rot of lychee seem to be adaquately explained as being caused by infected oak roots.

The story of "Typhoid Mary" may be pertinent at this point. She was a cook who had recovered from typhoid fever but was a carrier of typhoid bacteria. She persisted in working as a cook despite the efforts of the authorities, and in the course of her lifetime was responsible for bringing typhoid fever to 200 different people.

Mushroom root rot has its "Typhoid Mary's" also. These are the trees which are attacked by the disease but can continue to live for years despite the attack. At the same time trees serve to keep the fungus alive for an extended period. Trees which typically act in this way are the oaks and especially the scrub oaks which are found almost everywhere in Florida. The worst feature of this relation is that even after land is cleared for the planting of a new grove any pieces of oak root which remain in the ground will continue

to harbor the Clitocybe fungus for many years. Any lychee roots which make contact with such buried infected oak roots are apt to contact this disease. I should like to emphasize that such roots can remain in the ground for years and still be capable of carrying the diesase.

Obviously proper preparation of a new area for a lychee planting includes the removal of all roots and rot pieces which could possibly contain Clitocybe fungus.

Fig. 1. Two month old culture of **Clitocybe tabescene** on potato malt agar in a 500 cc flask. Fruiting bodies are beginning to grow.

CLITOCYBE ON LYCHEE

The first record of a lychee tree infected with Clitocybe, to the best of my knowledge, is the discovery of an infected tree by Rhoads (at Artesia, Brevard County) in 1941 (2). This tree was reported to have been treated surgically, successfully. Cobin reported 2 trees killed in a young planting on Ferritt Island in 1951 (1). Within the last year I have seen 6 or 8 infected trees on Merritt Island, about 15 young trees in a number of commercial groves in the area south of Sarasota, and have examined an old lychee tree in a dooryard planting at St. Petersburg. The later case, found by Plant Board Inspector Lester B. Hill is interesting because it illustrates the course of development of the disease. Since this was in an old residential area with no oaks nearby it appeared that it might be one of the exceptional cases where the disease was not caused by rot contact, but on investigating Inspector Hill found that two loquat trees and a Cattley Guava had been killed about 10 years before by mushroom root rot about 60 feet from the affected lychee. While we have no proof that infection came from that source past experience with this disease has indicated that it moves very slowly through the soil on infected roots and the lychee was probably diseased for years before its condition was recognized so that the old diseased loquat and guava trees very likely did infect the lychee tree.

Fig. 2. Same culture as in Fig. 1, three days later.

Development of disease symptoms on lychee seems to follow the same pattern as has been observed on other crops. The initial attack is underground, as has been mentioned, usually from a piece of old infected root. The fungus is able to penetrate intact bark although it may move more quickly into a mounded area. The characteristic feature of mushroom root rot is the sheet of fungus tissue which appears between the bark and the wood. This sheet advances from the point of attack toward the crown of the tree. The tree may be extensively attacked and more than half girdled before the fungus sheet reaches ground level. The growth of this fungus tissue is extensively slow. This has been demonstrated both in nature and in artificial inoculations.

ARTIFICIAL INOCULATIONS

Plakidas (6) in Louisiana inoculated 18 sand pear trees with pure cultures of Clitocybe grown on wood. One year-old tree wilted within 8 months. After 2 to 2½ years he found that 3 other trees were definitely attacked but not killed. There were indications at that time that other inoculated trees had been attacked but no signs of extreme distress were present. Rhoads (5) in inoculations with infected pieces of roots and cultures on wood had some inoculated Australian pines killed within 3 years but under other conditions the diesese was still spreading in trees five years after inoculation.

In stark contrast to the slow growth of the fungus is the speed with which trees go from apparently healthy to completely dead. That this is true for lychees was demonstrated on Merritt Island where a tree was found dead and fully girdled which had been in full leaf and was flowering weeks before. Another tree which was somewhat wilted was found to be more than two thirds girdled by Clitocybe. Within months this too was dead. In a grove south of Sarasota a young tree more than half girdled at the crown appeared quite healthy at a distance.

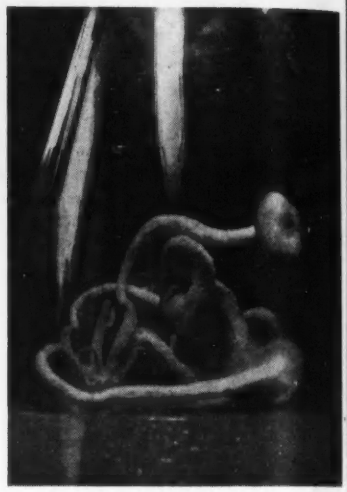


Fig. 3. Same culture as in Fig. 1, one week later. Note decurrent gills.

It is plain, therefore, that early symtoms of Clitocybe not cannot be

FLORIDA ENTOMOLOGISTS STUDY INSECT CONTROL

(Continued from page 9)

Company, Jacksonville; and the presidential address by Dr. F. Gray Butcher, of the University of Miami.

The presentation of papers will occupy most of the afternoon session, together with a hospitality hour from 6:30 to 7:30 P. M. and a buffet supper at 7:45. Special arrangements have been made for the ladies attending the meeting on Thursday. Inspection tours are planned at WMBR-TV studio, The Prudential Insurance Company, and luncheon at the officers' mess at the Jacksonville Naval Air Station. During the Friday sessions, the ladies will be free to shop and go sight-seeing in Jacksonville.

The Society has 265 members. The greatest attendance in the history of the Society is anticipated.

found by a cursory glance at a tree in the grove. An early warning of the diseased condition of trees of other species has sometimes been obtained by finding the fruiting bodies of the fungus at the base of the tree. They can usually be seen in the autumn but may also appear at other times of the year.

HANDLING OF INFECTED TREES

When a tree has been found infected by Clitocybe rot in a grove the best policy is to remove it immediately taking care to remove all roots and then to treat the soil to kill any roots which may have been missed.

With other crops less drastic measures have sometimes been used. Infected trees are removed together with all diseased roots and the space left open and unplanted for a period of about six months to allow any small pieces of fungus tissue near the surface to be killed by dessiccation.

If the infected tree is not in a grove, or is considered especially valuable it may be treated surgically in an effort to save it. The possibility of secondary rot makes such surgical treatment hazardous but if the infected roots are carefully removed and the affected wood at the crown carefully chiseled away well into healthy wood and all cut surfaces covered with an antiseptic pruning point, the chances are good that the life of the tree will be prolonged.

The possibility that some pieces of infected material will remain in the soil even after the most careful preparation of a planting area suggests that various methods of chemical treatment should be tried. For treatment of small areas the use of a soil drench consisting of 1 part of commercial formalin and fifty parts of water is recommended by West(8). This solution must be applied liberally to the entire root area. In California, where Armillaria root ot has long been a problem in citrus groves, carbon disulfide has been found to be an effective fumigant but its mechanism of action is quite complex and it can be recommended for Florida only on an experimental basis. With the development of good facilities for treatment of a large acreage of land with DD and other soil fumigants an opportunity is afforded for the experimental use of these materials in ridding soil of Clitocybe infestations.

GEOGRAPHICAL DISTRIBUTION

It is of interest to study the distribution of Clitocybe tabescens in Florida as it has been observed through the years. I know of no report of infected trees of any kind south of Broward County and the Ft.

Dr. R. K. Harmon, Winter Haven grower and cattleman, and Bill Cook, d/p DOLOMITE Field Representative, examining fruit in Doctor Harmon's grove.

Doctor Harmon is a druggist as well as a citrus grower and rancher. As a druggist he appreciates the importance of magnesium and calcium in plant and animal health. As a grower and cattleman he is aware that d/p DOLOMITE keeps his groves and pastures in better health, his yields bigger and his profits higher.

"Because d/p DOLOMITE restores acid-alkali balance in the soil it makes other plant foods more readily available. I have found my groves and pastures healthier. I have less dieback and pruning and other maintenance are at a minimum," explains Doctor Harmon.

"d/p DOLOMITE makes my trees vigorous and hardy and such trees, of course, yield better and more fruit. I regard d/p DOLOMITE as virtually a primary plant food. And I find d/p DOLOMITE'S soil laboratory and field service most helpful to me in getting bigger, better crops."

YOUR crops also need this great soil conditioner and supplier of essential magnesium and calcium. Join the growing circle who are profiting from d/p DOLOMITE'S superior qualities.

Dolomite Products has a complete line of liming materials—Dolomitic and Hi-Calcium Limestone bagged and bulk. Also dried Hi-Calcium Limestone bagged and bulk.

For information or arrangements to have a d/p DOLOMITE field representative call on you, write, wire or phone the address below—or see your local spreader.

DOLOMITE PRODUCTS, INC.

HALL BUILDING, P.O.BOX 578, OCALA, FLORIDA

Lauderdale area despite the fact that this area contains many trees we know to be susceptible. This is a region of generally alkaline marl-type soil. No other large area in Florida is known to be free of this disease but generally it is not found in low hammock soil which is heavy and near neutral in reaction and it seems most prevalent in well drained sandy, acid soil (4). The fungus can tolerate abundant moisture however and a very severe infestation of rubber plant (Ficus elastica) was found by Rhoads in a dense planting which was watered daily (3). This was on a deep sandy soil.

Clitocybe not does not appear when new plantings are made on land on which no susceptible plants were grown, even on soil types which are known to support the growth of this fungus. For example it has not been found in flatwood areas from which scrub oaks are absent and which contain mainly pine and palmetto growth.

CULTURAL STUDIES

It was mentioned before that another mushroom root rot fungus has occasionally been found in Florida — **Armillaria mellea.** The question therefore arose whether the diseased trees we had been seeing might not have been attacked by this organism. For this reason portions of affected trees were cultured to isolate the causal organism. The isolation technique which worked best was to disinfect small pieces of the fungus sheet rather than attempt to obtain the organism from pieces of whole infected root.

A number of isolations were made from material from Sarasota as well as from a collection from Merritt Island. All proved to be Clitocybe rather htan Armillaria since the cultures were not luminescent, no blackish "shoestring" rhizomorphs were obtained, and fruiting bodies were obtained in culture which lacked the annulus, a ring of tissue on the mushroom stalk which is found on the Armillaria fruiting body. Fruiting bodies in the field were also identified as Clitocybe.

The growth in culture of **Clitocybe tabescens** is strikingly illustrated in figures 1 to 3 which show the rapid growth of this fungus on potato malt agar during the week of fructification. This should be contrasted with its slow growth of the previous 2 months.

CONCLUSIONS

What is the significance for the lychee grower of what has been said here? Clitocybe rot has been with us for a long time in many crops but its virulence varies with the crop. Clitocybe apparently attacks lychees more severely than citrus so it is definitely a problem which must be faced.

Obviously the best way to handle the problem is to choose a planting location where no mushroom root rot can be expected. If you can plant in an old area in which non-susceptible crops have been grown for perhaps 10 years or more, or a newly cleared one on which no scub oak had been growing the chances are that you will never have Clitocybe trouble. Since such areas are hard to find most growers will probably be planting on land on which oaks or other susceptible trees have grown. Proper land preparation is needed here as insurance against Clitocybe attack. Careful examination of the land before clearing will enable the grower to select places which must be worked especially intensively and deep plowing will help remove most of the buried roots which might later cause trouble. A little extra effort in the clearing of the land will pay big dividends in freedom of the grove from Clitocybe rot.

When the grove has been planted the grower should watch carefully for the appearance of a clump of mushrooms at the base of any of his

LYCHEE

NURSERY STOCK

AIR LAYERS FROM OUR OWN BREWSTER TREES

18"-24" Sizes and Larger Single Plants from $3.50

Substantial 'Sliding Scale' Discount on quantity purchases for Grove plantings

You are cordially invited to visit our groves.

Your West Coast Head. for all Subtropical Fruit Trees.

PALMER NURSERIES
OSPREY, FLORIDA
J. H. Popham, Jr., Mgr.

BATHE YOUR WAY to HEALTH

Millions have taken the baths at Hot Springs—America's only health resort with natural thermal waters under the regulation of the Director of the Nat'l. Park Service, U.S. Dept. of the Interior —and, countless people have testified to the magic qualities of these world-famous baths. You, too, can find relief for jangled nerves, aching muscles, stiff joints, hardening of the arteries, and, yes, even rheumatism and arthritis.

THE Majestic HOTEL & BATHS

From $3 per day single
$4.50 per day double
'And you can budget your meals at approximately $4.50 a day

SEE YOUR TRAVEL AGENT OR WRITE THE MAJESTIC HOTEL FOR LITERATURE

HOT SPRINGS
NATIONAL PARK, ARKANSAS

trees — a warning that Clitocybe rot has begun its attack. Quick removal of such trees and treatment of the soil will prevent possible spread of the disease. Any other trees found infected should also be removed and the ground treated. With prompt action of this kind I can see no reason why Clitocybe rot should present a major problem to the lychee industry, but only prompt treatment can be depended on to meet this problem at this time.

Literature Cited

1. Cobin, Milton. The Lychee in Florida. Bulletin 546. University of Florida, Agriculture Experiment Station. 1954.
2. Rhoads, A. S. Notes on Clitocybe root rot of bananas and other plants in Florida. Phytopath 32:487-496. 1942.
3. Rhoads, A. S. An unusual case of Clitocybe root rot in Ficus elastica propagation stock in a Florida nursery. Phytopath 37:523-524. 1947.
4. Rhoads, A. S. Clitocybe root rot of woody plants in the southeastern United States. Circular 853. U. S. D. A. 1950.
5. Rhoads, A. S. The destructiveness of Clitocybe root rot in plantings of Casuarinas in Florida. Lloydia 15:161-184. 1952.
6. Plakidas, A. G. Infection with pure cultures of Clitocybe tabescens. Phytopath 31:93-94. 1941.
7. Thorton, R. P. Peaches as a potential crop in South Florida. Florida State Horticulture Soc. Proc. 53:49-51. 1940.
8. West, Erdman. Mushroom root rot in Florida. Proc. Fla. Hort. Soc. 1949. 185-187. 1949.

STATE HORTICULTURAL SOCIETY MEETS IN CLEARWATER, NOV. 1, 2, 3

Secretary Ernest L. Spencer has announced that the 68th Annual Meeting of the Florida State Horticultural Society will be held at the Fort Harrison Hotel in Clearwater on November 1, 2 and 3.

Additional notice of this meeting will be given in future issues of this publication, but the preliminary announcement indicates that the meeting this year will equal in interest, if indeed, it does not surpass any of the previous sixty-seven gatherings of Florida horticulturists.

A complete program of the meeting will appear in the October number of this magazine.

Most vegetable and fruit storage must be dark, moderately humid, and well ventilated.

POLICY COMMITTEE URGES MORE FOREIGN TRADE RESEARCH

The Agriculture Research Policy Committee has recommended increased emphasis by USDA's Foreign Agriculture Service on research concerned with overall economic aspects of foreign trade in U. S. agricultural products.

Committee members, in their quarterly meeting here June 30 and July 1, stressed the need in this country for more knowledge of what is going on in foreign markets. Emphasizing also the need for high quality in agricultural exports, the committee pointed out that abroad, as here, "the consumer writes the ticket."

The committee recommended that the Food Distribution Research and Marketing Advisory Committee and the Farm and Home Equipment and Structures Research Advisory Committee, both originally established as ad hoc groups, be continued as regular committees. It urged also that cost and margins studies of the Agricultural Marketing Service be continued in the marketing research pursued by the Department of Agriculture. It noted with favor the emphasis being placed by the Department on basic research, and urged its continuance and expansion.

Excess vegetables raised by 27 Leon County 4-H boys were sold for $473, according to Asst. County Agent R. A. Hartsfield.

Complete

CITRUS GROVE MANAGEMENT

The Very Best of Service to Grove Owners of either Large or Small Groves

Servicing The Polk County Area

LOGAN & RICKBORN INC.

LAKELAND, FLORIDA

2609 Orleans Avenue — Call 6-0501

EMJEO

(80/82% MAGNESIUM SULPHATE)

Many years a favorite source of soluble magnesia for Florida soils. Used extensively in fertilizer mixtures for citrus crops and vegetables. Especially useful and economical for direct application where only magnesia is required.

Florida growers now consider magnesium a primary plant food in the same category with nitrogen, phosphorus and potash.

The recommendations of the Flordia Citrus Experiment Station at Lake Alfred, published in January 1954, stress the need for large application of magnesium for Citrus in soluble form and state that it is usually applied as a Sulphate.

Ask your fertilizer manufacturer for EMJEO, long a dependable source of this key plant food.

BERKSHIRE CHEMICALS, INC.

420 Lexington Avenue New York 17, N. Y.

. Magnesium .
. For a Full Harvest .

ADVERTISEMENT — LYONS FERTILIZER COMPANY

The LYONIZER

COMPILED BY THE LYONS FERTILIZER COMPANY

Reports Of Our Field Men . . .

HIGHLANDS AND POLK

J. K. Enzor, Jr. & R. E. Lasseiter, Jr.

By the latter part of July most growers in this area had finished their summer scalicide spray. Groves should be watched closely following this spray for increases in rust mite populations.

Although we have had some good rains they have not been general and there are still a few dry spots. In the blocks that were very dry there is considerable bloom showing up at this time. It looks as though quite a bit of this bloom will set.

This is the time of year that growers should be thinking about the application of dolomite and if the pH is down below 5.8 dolomite should definitely be applied.

WEST HILLSBOROUGH AND PINELLAS COUNTIES

J. A. Hoffman

Most groves in these sections have put on a new flush growth and in some places a heavy July bloom. Dry weather has shortened the early crop, but rain the past month has brought the trees out and a heavy late bloom appears to be setting in many groves. Fruit is sizing up nicely and the quality is good thus far.

Growers were delayed a month with their summer grove practice due to the lack of rainfall during May and the first part of June. Fertilizing is still going on the middle of July in some groves. Scales was so bad in some cases that it was necessary to spray with oil before fertilizing. A heavy infestation of rust mite has also added to the grower's laments.

SOUTHWEST FLORIDA

Eaves Allison

With the beginning of the rainy season in this area early in June there has been no further suffering for moisture in our grove acreage. Seems like an old time "Regular" rainy season for a change.

At this time, July 15th, a heavy summer bloom has appeared on those trees which lost their normal spring bloom to the late cold. The fruit-set on this bloom seems to be quite good and it looks like some growers are going to have a fine crop to sell next summer. When the price should be tops, as everything else will be off the trees and gone when this stuff matures.

Vacation time is here and farm activities are at a low ebb except for normal land clearing operations and the whir of the lime distributors sweetenin' it up for the next go-round. One pleasant observation this year has been the vast reduction of mosquitoes where county and state control measures have drained the breeding grounds of stagnant water. Farm and grove labor will appreciate this, and the farmer's dollar will not be split up so badly between work preformed and slapping mosquitoes! We are fer it!

NORTH CENTRAL FLORIDA

V. E. Bouriand

We have been having rain, but it hasn't been a general rain. Some places are still dry while others are getting too much.

Groves are looking good, and cover crops are shorting. Fruit is showing up some better and my guess is that we will have a crop about like last year in boxes over all. Some bloom but you can't count on it now.

Pastures are all looking good, and cattle are fine.

EAST HILLSBOROUGH AND PASCO COUNTIES

E. A. McCartney

Most of the heavy work is over for this summer — such as fertilizing, disking and about one half of the spraying has been done in this section. Citrus as you all know brought a price that the grower could make a little money. Even some of the growers that had marshseedless grapefruit didn't do bad.

Our summer application of fertilizer is over. Vegetable growers also did all right in most cases. So as a whole we all came out fairly well. Good growing weather this past two weeks for citrus. June and July — Bloom all over the place where the trees were damaged by dry weather. Sure hope it sets.

The Lyons Fertilizer Company is holding its annual meeting starting July 22nd at Daytona Beach after which most of the field men will be going on their vacation. So so long until August.

SOUTH POLK, HIGHLANDS, HARDEE AND DESOTO COUNTIES

C. R. Wingfield

The rains although spotted, have brought our moisture up to a fairly good level. However, a few days without showers could put us back to irrigating. Citrus trees have responded to this moisture and have put on a good growth and some trees have been white with bloom. This bloom is especially on those trees with a very light crop of normal bloom.

The citrus crop still appears to be generally light with first one variety light here and another elsewhere. The late bloom will no doubt change this picture to some degree. The better crops appear to be on younger trees from 5 to 10 yeas of age.

With their fertilizer application behind them the growers have had a busy time in getting scale and rust mite under control. Both have been very active for some time. There has been a heavy leaf drop from scale.

Vegetable growers are preparing for a fall crop but at this time we are unable to estimate the acreage.

Produce

MAXIMUM CROPS

OF

FINEST QUALITY

With

LYONS FERTILIZER

ADVERTISEMENT — LYONS FERTILIZER COMPANY

Uncle Bill Says:

We remember hearin' a feller say some years ago that the Florida citrus grower had better be lookin' around fer some other business to git into 'cause they was too much citrus fruit bein' produced and it wouldn't be long until they wouldn't be no market fer this fine Florida crop.

Since that time they has been thousands of acres of citrus trees planted and some of these trees has already come into bearin' but so fer as we kin see there is just as much of a market today fer citrus as they was when the total crop was some 10 er 15 million boxes less than it is today.

And if you stop to do a little figurin' the answer ain't too hard to find . . . population has been increasin' in this country by leaps and bounds . . . our foreign markets is much bigger than they used to be . . . and the development of citrus by-products has made it easier fer the citrus consumer to git his citrus in the form that he wants it with the least possible inconvenience . . . so they is a lot more citrus bein' consumed — fresh, canned and frozen, than was the case when this feller we're talkin' about said the market would be all shot to pieces several years ago.

Citrus is just like everything else . . . take automobiles, electric washers, television sets, clothing, er what-have-you, the public is buying what they want and plenty of 'em and will continue to do so jist so long as this era of high standard of living is permitted to exist, which fer all we kin judge is goin' to be from now on.

And like everything else the better the product the higher the demand . . . so growin' top quality citrus by usin' Lyons Fertilizers is sure goin' to be reflected in the prices you get.

Growers Administrative And Shippers Advisory Committees Named

The appointment of eight members and their alternates, respectively, to the Growers Administrative Committee and to the Shippers Advisory Committee to serve under the amended marketing agreement and order program regulating the handling of oranges, grapefruit, and tangerines, grown in Florida, was announced today by the U. S. Department of Agriculture. The period covered by these appointments is August 1, 1955 — July 31, 1956.

The Growers Administration Committee, members and alternates, include the following:

Richard M. Clewis, Jr., and Robert P. Thornton, Tampa; Chas. Z. Osborne, Umatilla, and R. H. McKinney, Eustis; W. A. Prevatt, Seville, and Alfred P. Brill, Jr. De Land; Jack H. Ross, Oakland, and Gus A. Seidel, Gotha; Robert S. Edsall, Vero Beach, and R. C. Brady, Titusville; Robert J. Barden, Avon Park, and Clark Brown, Jr. Arcadia; Sidney I. Smith and Alfred S. Estes, both of Winter Haven; George W. Barr and Alfred M. Tilden, both of Winter Haven.

The Shippers Advisory Committee, members and alternates, include the following: Fred S. Johnston and Harry G. Gumprecht, Jr., both of Tampa; M. K. Stevenson, Waverly, and Phil C. Peters, Winter Garden; William G. Strickland, Vero Beach, and O. L. Peacock, Fort Pierce; John Schirard, Jr., and Robert H. Reely, both of Sanford; H. Y. Griffin, Auburndale, and Ralph Wetherington, Winter Haven; Francis X. Heidrich, Orlando, and James Heller, Winter Garden; Albin P. Crutchfield, Howey-in-the-Hills, and Jules W. Bragin, Clearwater; B. H. Griffin, Jr., Avon Park, and Tom Turnbull, Winter Haven.

The Shippers Advisory Committee makes appropriate recommendations, when it is deemed advisable, to limit the shipments of certain grades and sizes of oranges, grapefruit, and tangerines, and passes them on to the Growers Administrative Committee. Each recommendation of the Shippers Advisory Committee, together with its own recommendation for limiting shipments, is transmitted by the Growers Administrative Committee to the Secretary of Agriculture. The Growers Administrative Committee also serves as the official administrative body under the amended marketing agreement and order program.

CITRUS BUDWOOD CERTIFICATION PROGRAM

(Continued from page 8)

organized their work on the basis of their observations of the previous day. Dr. Childs and Dr. Knorr took so much interest in the Budwood Program and indicated their willingness to assist us in every way possible that arrangements were finally made with the two stations so that these men could be called on for consultation whenever needed. Both of them have not only given us their time in the field but have done and are still doing a great deal of supplementary work to help answer some of the many questions arising in the course of our work. Neither one of these men has ever failed us when called on for help and both of them have gone out day after day and worked with us in the field.

I believe we can take some credit here for having brought to the attention of our research pathologists a number of virus-like conditions of which they were unaware. Because of the volume of man power we were able to throw into this work and our method of systematic combing of whole blocks of trees, leaf by leaf and limb by limb, we were able to provide them with a considerable amount of unusual specimen material. Very possibly some of the trees we have found and brought to their attention may in time make contributions to a more complete knowledge of citrus virus problems.

This spring as the number of new trees applied for began to level off and our work during the flush became a little less hurried, we put into effect the second phase of our Program, namely the elimination of trees with an abnormal amount of bud variation.

Classified Ads

SUPERIOR CITRUS TREES — Now accepting orders for Valencia and Pineapple on rough lemon for next Winter planting. Most other varieties available now. Call us 2-7541 for quotation. Leaflet "Tips for Growers" mailed on request.
WARD'S NURSERY
Box 846 Avon Park, Florida

PERSIAN LIME TREES — Ready for delivery. Other popular varieties all on rough lemon root, for delivery now or January, 1955.
ADAMS CITRUS NURSERY
1700 Villa Road Winter Haven, Fla.

OUTSTANDING DOGS
Bird dogs, Straight cooners, Fox and Deer hounds, Squirrel dogs. Trial allowed. Literature free.
Swannee River Kennels
Phone 2082 Chiefland, Florida

THE Kimberly
Air-Conditioned and Heated
Member the Diners' Club
INFORMAL LUXURY IS THE KEYNOTE
DIRECTLY ON THE OCEAN AT 158TH STREET
MIAMI BEACH
• 124 Luxuriously furnished rooms
• 400 feet of Private Beach
• Salt Water Swimming Pool • Cabanas
• Free Parking on Premises
• Cocktail Lounge & Restaurant
• Entertainment Solarium
$2.50 per person double occ.
MOTORISTS ... You'll enjoy our Motel Accommodations
SPECIAL MONTHLY RATES
Write today for full information and reservations.
---TEAR OUT AND MAIL NOW!---
Hotel Kimberly
158th St. and Ocean
Miami Beach, Florida
Please send me your FREE brochure and full details
NAME .....
Address .....

This phase of course, is based on the requirement in our regulations that all candidate trees be true to type. So in addition to the regular leaf reading for Psorosis, all the late seedless varieties in the program, Valencia, Lue Gim Gong, etc., were given a thorough screening for stability. This included inspection for fruit mutation or chimera, and the genetic variants of bark and foliage which are almost virus-like in these late varieties. I am sorry to have to tell you that many of our candidate trees were eliminated in the course of this inspection. Even if we accept the fact that a certain amount of freakishness and minor variations are normal in these late varieties, we must draw the line somewhere. We feel that there is a very definite reason for this high percentage of variability and that reason is simply that in the past buds have been selected without any regard to yield and fruit uniformity.

Most of you are familiar with the methods used in seed certification in field crops. Seed strains are carefully selected, tested for germination and treated for preservation. If a man growing an annual crop such as potatoes, or peanuts, in which he will have only a few weeks or a few months of his time invested, can see the value of paying a premium for seed to insure a good start for his crop, the citrus grower who is making a lifetime investment in perennial trees should realize the importance of giving his grove the best possible beginning.

Because we normally use citrus seed only to supply a root system to support and nurish the budded or producing part of the tree, seed selection, while extremely important in citrus, is overshadowed by the importance of the transplanted bud which not only establishes the variety of the tree but gives it its genetic characters. In most cases this bud is essential if the grower intends to propagate some of the commercial varieties. Therefore, the bud strains to be used becomes the very foundation of a successful grove. In spite of this obvious conclusion, bud selection in Florida has been sadly neglected.

(Concluded Next Issue)

No other treatment can do so much to make a sandy soil better for gardens use as the addition of organic mater in large amounts, say the authors John V. Watkins and Herbert S. Wolfe, the authors of the University of Florida Press book, "Your Florida Garden."

Musical comedy, of all our modern forms of music and drama, comes closest musically to resembling the plays of Shakespeare's day, says John H. Long, the author of the University of Florida Press book, "Shakespeare's Use of Music."

More than 20 counties in Florida reported no hospital in operation in 1952, according to John M. Maclachlan.

Lakeland Engineering Associates, Inc.
DESIGN & CONSTRUCTION SUPERVISION OF INDUSTRIAL PLANTS
LAKELAND FLORIDA

ON THE SPOT DELIVERY!

DIRECT FERTILIZER SERVICE to the field, grove or pasture. Complete field service, coordinated with spreading requirements is rendered by a fleet of 15 trailer truck units. Fertilizer mixtures are formulated according to actual requirements. Here's a service that really saves you time and money. Write or phone for full information.

CITRUS GROVES
FIELD CROPS
PASTURE GRASS
TRUCK FARMS

florida favorite fertilizer
INCORPORATED
PH. MUTUAL 2-1291 • P.O. BOX 912 • LAKELAND, FLA.

Write For Full Information

If Your Trees Could Only Ta...

There never would be any doubt as to which fertilizer they felt was most beneficial to their welfare.

But since the chances are that trees will never reach this advanced stage of culture it behooves every grower to judge from the physical condition of his trees and the nature of the crops they produce as to the effectiveness of the fertilizer which provides the trees with their plant food.

It is the sincere belief of this company that we furnish in our Lyons fertilizers the finest plant foods that it is possible for the best materials to produce.

This belief, apparently is not confined to members of our organization as is evidenced by the large number of growers who continue to use Lyons Fertilizers year after year . . . and whose crops bear eloquent witness to the effectiveness of our fertilizers.

We are pleased, also, to report that the number of customers is increasing with each passing year . . . and we firmly believe that if you will use Lyons Fertilizers you will be numbered among our long list of permanent customers.

Our Field Service Men will be only too glad to co-operate with you in dealing with any special problems which may be peculiar to your groves . . . and completely without obligation.

Lyons Fertilize... Company

Phone 43-1...

TAMPA, FL...

LYONS FERTILIZERS Produce MAXIMUM CRO... OF HIGHEST QUALITY

XUM